

LISTING OF CLAIMS:

1. (Currently amended) A printed wiring board comprising:

an insulator board having a via-hole, a first surface and a second surface that is opposite the first surface;

a pair of first and second conductor patterns formed on the insulator board that are respectively located on the first surface and the second surface to cover the via-hole, and that include a metal; and

a unified conductive compound provided in the via-hole and electrically interconnecting the pair of conductor patterns; and including a first metal and a second metal having a higher melting point than a heating temperature required for interconnecting the first and second conductor patterns; and

first and second solid phase diffusion layers formed from the metal in the first and second conductor patterns and the first metal in the unified conductive compound diffused into the metal in the first and second conductor patterns, the first and second solid diffusion layers located between the unified conductive compound and the first and second conductor patterns;

wherein a sidewall of the unified conductive compound in the via-hole has a is concave in shape in such a manner that the farther from the conductor patterns on the sidewall, the closer to a center axis of the via hole and approaches a center axis of the via hole approximately halfway between the first surface and the second surface of the insulator board; and

the pair of conductor patterns including a metal;

the unified conductive compound comprises a first metal and a second metal having a higher melting point than a heating temperature required for interconnecting the conductor patterns; and

the pair of first and second conductor patterns are electrically interconnected using by the unified conductive compound and the first and second solid phase diffusion layers that are formed by mutual solid phase diffusion between the same metal as the metal in the conductor patterns and the same metal as the first metal in the conductive compound.

2. (Currently amended) The printed wiring board as in claim 1, wherein the side wall of the unified conductive compound has an arch shape between the first and second solid phase diffusion layers on a cross-sectional plane passing through a center axis of the via-hole.

4. (Currently amended) The printed wiring board as in claim 1, wherein the unified conductive compound is made of a sintered metal made from metal particles.

Claims 5.-15. (Canceled)

16. (Previously added) The printed wiring board as in claim 1, wherein the first metal is tin and the second metal is silver.

17. (Currently amended) A printed wiring board comprising:

an insulator board having a via-hole, a first surface and a second surface that is opposite to the first surface;
a pair of first and second conductor patterns, which that include a metal and that are respectively located on the first surface and the second surface to cover the via-hole
formed on the insulator board;

a unified conductive compound, ~~which that is located in the via-hole that includes a first metal and a second metal that has a higher melting point than a heating temperature required for interconnecting the first and second conductor patterns; and~~

~~a pair of first and second solid phase diffusion layers, which that are made of formed by mutual solid phase diffusion between the same metal as the metal included in the first and second conductor patterns and the same metal as the first metal included in the conductive compound, wherein each of the first and second solid phase diffusion layers is located between the unified conductive compound and one of the conductor patterns, and wherein the first and second conductor patterns are electrically interconnected by the unified conductive compound and the first and second solid phase diffusion layers.~~

18. (Currently amended) The printed wiring board as in claim 17, wherein the unified conductive compound is an alloy that includes sintered metals, ~~made from metal particles.~~

19. (Currently amended) The printed wiring board as in claim 17, wherein the first metal is tin and the second metal is silver.

20. (Currently amended) A printed wiring board comprising:

an insulator board having a via-hole, a first surface and a second surface that is opposite to the first surface;

~~a pair of first and second conductor patterns, which that include a metal and that are formed on the insulator board respectively located on the first surface and the second surface to cover the via-hole; and~~

a unified conductive compound ~~which~~ that is located in the via-hole and that includes a first metal and a second metal that has a higher melting point than a heating temperature required for interconnecting the conductor pattern, wherein:

the unified conductive compound is an alloy that includes sintered metals ~~made from~~ ~~metal particles~~ including the first metal, and other metal particles including the second metal; and

the first and second conductor patterns are electrically interconnected by the unified conductive compound.

21. (Previously added) The printed wiring board as in claim 20, wherein the first metal is tin and the second metal is silver.

22. (Currently amended) The printed wiring board as in claim 20, wherein ~~in the unified conductive compound further comprises first and second solid phase diffusion layers between and electrically connecting the unified conductive compound and the first and second conductor patterns; and~~

~~wherein a sidewall of the unified conductive compound in the via-hole between the first and second solid phase diffusion layers is concave and approaches a center axis of the via-hole approximately halfway between the first surface and the second surface has a shape such that the farther from the conductor patterns on the sidewall, the closer the sidewall is to a center axis of the via hole.~~

23. (Currently amended) The printed wiring board of claim 1, wherein ~~the shape of the sidewall of the unified conductive compound between the first and second solid phase diffusion layers follows a convex protrusion of the insulator board that is farthest from the center axis of the via-hole near the first surface and the second surface and closest to the center axis of the via-hole~~

~~approximately halfway between the first surface and the second surface increases toward the center axis with increasing distance from the conductor patterns along the sidewall.~~

24. (Currently amended) The printed wiring board of claim 1, wherein the sidewall of the unified conductive compound pattern is inclined with respect to the pair of first and second conductor patterns, wherein stress concentrations are avoided at an area of an electrical contact between the first and second conductive conductor patterns and the unified conductive compound.